

Appl. No. 09/390,362

Reply to Office Action of: April 26, 2006

**Amendments to the Claims**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of claims:**

1. (currently amended) A method of digitally signing a plaintext message exchanged between a pair of correspondents in a data transmission system, one of said pair of correspondents being the signer and having a private key  $\alpha$  and a public key derived from the private key  $\alpha$ , said public key being [[and]] available to the other of said pair of correspondents, said method comprising the steps of:

subdividing said plaintext message into a first plaintext bit string H and a second plaintext bit string V;

~~utilizing computing a first signature component c as a function of said first plaintext bit string bit string H to compute a first signature component c, in which the wherein the plaintext bit string H is hidden in said signature component c;~~

~~forming from computing an intermediate signature component c' as a function of said first signature component c and said second plaintext bit string V, an intermediate signature component c';~~

~~utilizing computing a second signature component s as a function of said intermediate signature component c' and said private key  $\alpha$  to provide a second signature component s, in which the plaintext is hidden; and~~

forming a signature (s,c,V) ~~by including~~ containing said first signature component c, said second signature component s, and said second plaintext bit string V as discrete signature components;

whereby during verification, said second plaintext bit string V is available from said signature (s,c,V) as an input to a verification protocol.

2. (previously presented) A method according to claim 1 wherein redundancy in said first plaintext bit string H is compared to a predetermined level prior to computing said first signature component c.

3. (previously presented) A method according to claim 2 wherein said redundancy is adjusted to

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exceed a predetermined level.

4. (previously presented) A method according to claim 3 wherein data is added to said first plaintext bit string H to adjust said redundancy.

5. (previously presented) A method according to claim 4 wherein an indicator is included in said first plaintext bit string H to indicate additional data.

6. (previously presented) A method according to claim 1 wherein said second signature component *s* is generated by hashing said first signature component *c* and said second plaintext bit string V.

7. (currently amended) A method of verifying a plaintext message from a signature of a purported signer in a data transmission system, said plaintext message being subdivided into a first plaintext bit string H and a second plaintext bit string V, said signature formed as a set of discrete components, ~~said components including~~ signature containing at least one a first component having only computed as a function of said first plaintext bit string H whereby said bit string H is encrypted therein, and a second component being said second plaintext bit string V as a second component, said purported signer having a private key used in the computation of said signature and a corresponding public key available for use in verification, said method comprising the steps of:

generating a value by combining said [[one]] first component with said second plaintext bit string V;

recovering said first plaintext bit string H from said combination value using publicly available information of the purported signer including said public key; [[and]]

examining said recovered first plaintext bit string H for a predetermined characteristic[.]; and

verifying said message if said predetermined characteristic is present.

8. (currently amended) A method according to claim 7 wherein said combination of said [[one]] first component and said second plaintext bit string V includes hashing a combination of said

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[[one]] first component and said second plaintext bit string V.

9. (previously presented) A method according to claim 7 wherein said predetermined characteristic is the redundancy of said recovered first plaintext bit string H.

10. (currently amended) A method according to claim 9 wherein said signature includes a third component derived from a combination of said [[one]] first component and said second plaintext bit string V and said first plaintext bit string H is recovered utilising said third component.

11. (currently amended) A method according to claim 1 wherein said first signature component *c* is ~~formed~~ computed by applying a function to said first plaintext bit string H and said first plaintext bit string H may be recovered from said first signature component *c* by applying a complementary function to said first signature component *c*.

12. (currently amended) A method according to claim 11 wherein said function is encryption with an encryption key, a decryption [[said]] key is ~~recoverable~~ computable from information available in said signature, and said complementary function is decryption with said decryption key.

13. (currently amended) A method according to claim 12, wherein said encryption key is a short-term ~~public~~ key derived from a ~~short-term private key~~ random integer used in the provision of said second signature component.